

REMARKS

Applicant amended claims 1, 26, 27, 29, 43, 67, 68, 70, 85, 110, 111, and 113, and added new claims 148-282 to further define applicant's claimed invention. The amendment to claims 1, 43, and 85 is supported at least by Fig. 10. The amendment to claims 26, 27, 29, 67, 68, 70, 110, 111, and 113 is supported by the specification at least on page 4, lines 1 and 2. New claims 148, 153, and 158 are supported by the specification at least on page 9, lines 2-4. Claims 149-152, 154-157, and 159-162 are supported by the specification at least on page 10, lines 12-22 and Figs. 4 and 7-9. New claims 163 and 223 are supported by claim 1 as originally filed and Fig. 10. New claims 164, 184, 204, 224, 244, and 264 are supported by claim 2 as originally filed. New claims 165, 185, 205, 225, 245, and 265 are supported by claim 3 as originally filed. New claims 166, 186, 206, 226, 246, and 266 are supported by claim 4 as originally filed. New claims 167, 187, 207, 227, 247, and 267 are supported by claim 6 as originally filed. New claims 168, 188, 208, 228, 248, and 268 are supported by claim 7 as originally filed. New claims 169, 189, 209, 229, 249, and 269 are supported by claim 8 as originally filed. New claims 170, 190, 210, 230, 250, and 270 are supported by the specification at least on page 9, lines 2-4. New claims 171, 191, 211, 231, 251, and 271 are supported by claim 12 as originally filed. New claims 172, 192, 212, 232, 252, and 272 are supported by claim 13 as originally filed. New claims 173, 193, 213, 233, 253, and 273 are supported by claim 16 as originally filed. New claims 174, 194, 214, 234, 254, and 274 are supported by claim 17 as originally filed. New claims 175, 295, 215, 235, 255, and 275 are supported by claim 20 as originally filed. New claims 176, 196, 216, 236, 256, and 276 are supported by claim 23 as originally filed. New claims 177, 197, 217, 237, 257, and 277 are supported by claim 26 as originally filed. New claims 178, 198, 218, 238, 258, and 278 are supported by claim 27 as originally filed. New claims 179, 199, 219, 239, 259, and 279 are supported by claim 32 as originally filed. New claims 180, 200, 220, 240, 260, and 280 are supported by the specification at least on page 11, lines 3-5. New claims 181, 201, 221, 241, 261, and 281 are supported by claim 42 as originally filed. New claims 182, 202, 222, 242, 262, and 282 are supported by the specification at least on page 10, lines 12-22. New

claims 183 and 243 are supported by claim 43 as originally filed and Fig. 10. New claims 203 and 263 are supported by claim 85 as originally filed and Fig. 10.

In the Office Action, the Examiner rejected claim 31 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Applicant respectfully traverses the Examiner's rejection. In the specification, Applicant teaches that the bone ring implant "may be made of a manufactured bone composite comprising of particle or filaments of bone and a bioresorbable plastic or ceramic or other suitable material." (Specification, page 5, lines 8-10). The "bone ring implants ... could include a bioresorbable material including, but not limited to cortical bone, plastics, and composite plastics." (Specification, page 11, lines 11-12). A spinal implant as recited in claim 31 may be manufactured by taking a bone ring obtained from a major long bone of a human and combining the bone ring with a bone composite to form the implant. Applicant submits that one of ordinary skill in the art would understand how such an implant is made without requiring further details beyond that already taught by Applicant. Accordingly, Applicant submits that the subject matter of claim 31 is enabled and meets the requirements of 35 U.S.C. § 112, first paragraph.

The Examiner rejected claims 1-22, 25-35, 43-63, 66-77, 85-106, 109-119 and 127-129 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,277,149 to Boyle et al. or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Boyle et al. alone. Independent claims 1, 43, and 85 as now amended recite an implant with a leading end having "a generally straight portion in a direction from one of said opposite sides to another of said opposite sides" along a portion or part of the perimeter of the body that is "adapted to abut the front wall of the implantation space when said implant is installed into the implantation space." Boyle et al. do not teach or suggest an implant having a generally straight portion in a direction from opposite side to opposite side of the implant and a trailing end that is at least in part curved along a middle portion of the trailing end of the implant as claimed by Applicant.

Applicant respectfully traverses the Examiner's contention that the particular configuration claimed by Applicant is an obvious matter of design choice. An implant with a leading end having a generally straight portion in a direction from opposite side to

opposite side and a trailing end that is at least in part curved along a middle portion of the trailing end has many advantages over the cited art, including Boyle et al. For example, one advantage is that the configuration claimed by Applicant conforms to an easily and reliably producible shape of an implantation space. (See Specification, page 7, lines 1-3). Another advantage is that the configuration claimed by Applicant maximizes the surface area of the implant in contact with the end and sidewalls of the implantation space abutting the implant. (See, e.g., Figs. 1 and 10). A further advantage is that a trailing end that is curved along a middle portion reduces the risk of interference of the trailing end of the implant with delicate neural structures and vessels that may be present proximate the trailing end of the implant when installed into the implantation space. The curved trailing end of the implant permits maximum utilization of the dense bone present along the perimeter of the vertebral endplates into which the implantation space is formed. The present invention provides significant advantages over the structure of the implant taught by Boyle et al. and permits better utilization of the available implantation space. Applicant submits that the invention of independent claims 1, 43, and 85 is inventive and not an obvious design choice.

With respect to claims 26-29, 67-70, and 110-113, Applicant respectfully disagrees with the Examiner's contention that the location and composition of the vertebral bodies is not defined. (See Office Action, page 4, first paragraph). Independent claims 1, 43, and 85 each recite an implant "for insertion at least in part into an implantation space formed across the height of a disc space between adjacent vertebral bodies of a human spine and into at least a portion of the endplates of the vertebral bodies." Further, the implant as recited has "opposite upper and lower surfaces adapted to be placed in contact with and to support the adjacent vertebral bodies." Applicant submits that the location of the vertebral bodies relative to the implant is clearly defined.

With respect to the composition of the vertebral bodies, Applicant does not understand the Examiner's statement that the "composition of the vertebral bodies is not defined." Applicant respectfully submits that vertebral bodies are naturally occurring bone masses that are consistent in composition from human to human. Applicant

submits that one of ordinary skill in the art of spinal surgery knows the composition of the vertebral bodies and that further definition in this regard is unnecessary.

The Examiner also rejected claims 23, 24, 64, 65, and 107-108 under 35 U.S.C. § 103(a) as being unpatentable over Boyle et al. in view of U.S. Patent No. 5,669,909 to Zdeblick et al.; rejected claims 36-42, 72, 78-84, and 120-126 under 35 U.S.C. § 103(a) as being unpatentable over Boyle et al. alone; and rejected claim 72 under 35 U.S.C. § 103(a) as being unpatentable over Boyle et al. in view of U.S. Patent No. 5,306,308 to Gross et al. Applicant submits that the rejections over claims 23, 24, 36-42, 64, 65, 72, 78-84, 107, 108, and 120-126 have been overcome at least because they depend from an allowable independent claim, or claims dependent therefrom.

Accordingly, Applicant submits that independent claims 1, 43, and 85 are allowable over the cited art and that dependent claims 2-30, 32-42, 44-84, 86-129, and 148-162 dependent from one of independent claims 1, 43, and 85, or claims dependent therefrom are allowable at least due to their dependency from an allowable independent claim. Applicant submits that the amendments to claims 1, 43, and 85 do not necessitate new grounds of rejection because the amendments were not made to overcome the Examiner's alternative 35 U.S.C. § 103(a) rejection of those claims, which Applicant respectfully traverses for reasons stated above.

New independent claims 163, 183, and 203 recite a spinal implant with a leading end having "a generally straight portion in a direction from one of said opposite sides to another of said opposite sides" along a portion or part of the perimeter of the body that is "adapted to abut the front wall of the implantation space when said implant is installed into the implantation space" and a trailing end that is "at least in part curved along a majority of said trailing end from one of said opposite sides to another of said opposite sides." Boyle et al. do not teach or suggest Applicant's invention as claimed in independent claims 163, 183, and 203. Applicant submits that new claims 164-182, 184-202, and 204-222 are allowable because they depend from an allowable independent claim, or claims dependent therefrom.

New independent claims 223, 243, and 263 recite a spinal implant with a leading end having "a generally straight portion in a direction from one of said opposite sides to

another of said opposite sides" along a portion or part of the perimeter of the body that is "adapted to abut the front wall of the implantation space when said implant is installed into the implantation space" and a trailing end having "an arcuate portion on each side of a vertical longitudinal plane along the mid-longitudinal axis and bisecting said implant between said opposite sides, each of said arcuate portions forming a part of an oval." Boyle et al. do not teach or suggest Applicant's invention as claimed in independent claims 223, 243, and 263. Applicant submits that new claims 224-242, 244-262, and 264-282 are allowable because they depend from an allowable independent claim, or claims dependent therefrom.

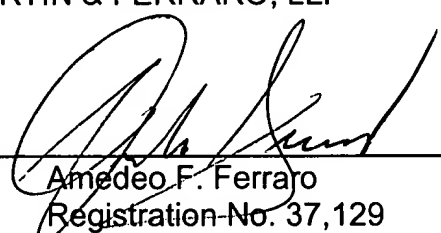
In view of the foregoing remarks, it is respectfully submitted that the claims, as amended, are patentable. Therefore, it is requested that the Examiner reconsider the outstanding rejections in view of the preceding comments. Issuance of a timely Notice of Allowance of the claims is earnestly solicited.

To the extent any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this reply, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 50-1066.

Respectfully submitted,

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